

CLAIMS

What is claimed is:

- 09918875-073101
1. A method for data storage and retrieval from a network of servers, said method producing a distributed data storage system with a level of redundancy, said method comprising the steps of:
- defining an amount of data pieces;
 - defining a minimal amount of data pieces k needed to restore a data file;
 - for a distributed arbitrarily-connected network of L servers, defining a number M of the servers that could be rendered inaccessible;
 - creating at least $M+k$ data pieces for storage on at least $M+k$ servers;
- whereby the ability to restore the data file from M servers is retained and the optimal utilization of data storage means obtained.
2. The method as defined in Claim 1 wherein said data pieces are numbered, interchangeable, and of equal size.

3. ~~The method as defined in Claim 1 wherein $k \leq n$.~~

4. The method as defined in Claim 1 wherein $M < L$.

1 5. The method as defined in Claim 1 wherein the number of data pieces n
2 depends on the fault tolerance level of and the number of servers in the network.

1 6. The method as defined in Claim 1 wherein the amount of redundancy data
2 stored for each file is incremented by steps of $1/k$ of the original file size and could be
3 varied for each file.

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1 7. A system for data storage and retrieval from a network of servers, said
2 system providing data storage with a controllable level of redundancy, said system
3 comprising for each file:

4 a predetermined amount of data pieces n ;

5 a minimal amount of data pieces k needed to restore a data file;

6 a predetermined number M of servers in a network containing L servers, that
7 could be rendered inaccessible;

8 at least $M+k$ data pieces for storage on at least $M+k$ servers;

9 wherein the ability to restore a data file from M servers is retained and the optimal
10 utilization of data storage means is obtained.

1 8. The system as defined in Claim 7 wherein said data pieces are numbered,
2 interchangeable, and of equal size.

1 9. ~~The system as defined in Claim 7 wherein $k \leq n$.~~

sub 10. The system as defined in Claim 7 wherein $M < L$.

1 11. The system as defined in Claim 7 wherein the number of data pieces n
2 depends upon the fault tolerance level and the number of servers in the network.

- 1 12. The system as defined in Claim 7 wherein the amount of redundancy data
2 stored for each file is incremented by steps of $1/k$ of the original file size and could be
3 varied for each file.

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